CLAIMS

What is claimed is:

1   1.   A method of storing objects in a nonvolatile memory comprising:

2   allocating space within a block erasable nonvolatile memory for an object,

3   wherein the allocated space is within a single block;

4   storing a first instance of the object within the allocated space; and

5   storing a superseding second instance of the object within the allocated space

6   without erasing any of the allocated space, wherein each instance of the object is a fixed

7   size, wherein the allocated space exceeds a multiple of the fixed size.

1   2.   The method of claim 1, further comprising:

2   updating status information within the allocated space to reflect that the second

3   instance supersedes the first instance.

1   3.   The method of claim 1, further comprising:

2   storing a header within a same block as the allocated space, wherein the header

3   identifies a location of the allocated space within the same block.

1   4.   The method of claim 1, wherein the nonvolatile memory is a flash electrically

2   erasable programmable read only memory.

1   5.   A method comprising:

2   receiving data for storage in a nonvolatile memory comprising a plurality of

3   blocks;

4   selecting a storage structure for the data according to a size (z) of the data, a

5   minimum number of instances (m), a maximum single instance size ($s*g$), and an

6   allocation granularity (g);

7   storing the data in the selected structure within the nonvolatile memory.

1   6.   The method of claim 5, wherein selecting the storage structure includes selecting a

2   multiple instance structure, if $z \leq \dfrac{g - \text{overhead}}{m}$, wherein the overhead is an amount

3   of space required as overhead for m instances within the multiple instance structure.

1   7.   The method of claim 5, wherein selecting the storage structure further includes

2   selecting a single instance structure, if $z \bullet s*g$ for s expressed as a number of granular

3   units.

1   8.   The method of claim 5, wherein selecting the storage structure further includes

2   fragmenting the data into a plurality of data fragments for storage, if $z > s*g$ for s

3   expressed as a number of granular units.

1   9.   The method of claim 8, wherein storing the data includes:

2   storing the data fragments using a sequence table indicative of an order and a location of

3   the data fragments, if a sequence table size does not exceed a maximum sequence table

4   size; and

5   storing a header for each data fragment and the sequence table, wherein the header

6   is located in a same block as its associated data fragment and sequence table, wherein

7   within a given block the headers are stored contiguously proceeding from a first end to a

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8   second end of the given block, wherein objects identified by the headers are stored

9   contiguously proceeding from the second end to a first end of the given block.

1   10.   The method of claim 8, wherein storing the data further includes:

2   storing the data fragments using sequence table fragments and a group table, if a

3   sequence table size exceeds the maximum sequence table size, wherein the sequence

4   table fragments are indicative of an order and a location of the data fragments, wherein

5   the group table is indicative of an order and a location of the sequence table fragments;

6   and

7   storing a header for each data fragment, sequence table fragment, and group table,

8   wherein the header is located in a same block as its associated data fragment, sequence

9   table fragment, and group table, wherein within a given block the headers are stored

10   contiguously proceeding from a first end to a second end of the given block, wherein

11   objects identified by the headers are stored contiguously proceeding from the second end

12   to a first end of the given block.

1   11.   A method for a memory device comprising:

2   duplicating a power-loss recovery (PLR) status field such that the duplicated PLR

3   status field is used if the PLR status field is invalid.

1   12.   The method of claim 11, wherein duplicating the PLR status field includes:

2   writing a same value in the PLR status field in the duplicated PLR status field.

1   13.   The method of claim 12, wherein writing the same value includes writing the

2   same value in the PLR status filed in the duplicated PLR status field in a subsequent bus

3   cycle.

1   14.   The method of claim 11, further comprising:

2   determining which of the PLR status field or the duplicated PLR status field

3   contains a greater amount of "1" bits for use in a power-loss recovery operation.

1   15.   The method of claim 11, wherein duplicating the power-loss recovery (PLR)

2   status field includes duplicating the power-loss recovery (PLR) status field a flash

3   memory device.